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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER	
OREILLY, PATRICK F	
ART UNIT	PAPER NUMBER
3749	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	01/09/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/537,155	LEE ET AL.	
	Examiner	Art Unit	
	Patrick F. O'Reilly III	3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17 and 19-21* is/are rejected.

7)☒ Claim(s) *18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 May 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/31/2005; 5/16/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for priority under 35 U.S.C. 120 on the basis of PCT/KR2002/002272 filed on December 3, 2002.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on May 31, 2005 is acknowledged. The submission is in compliance with the provisions of 37 C.F.R. § 1.97 and 37 CFR § 1.98 and, therefore, the references therein have been considered.

3. The information disclosure statement filed May 16, 2006 fails to comply with 37 CFR 1.98(a)(1), which requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement. The Chinese Office Action, which was submitted with the information disclosure statement, should have been listed on PTO-SB08 form under Non-Patent Literature Documents. The examiner is uncertain whether or not the applicant intends the Chinese Office Action to be part of the prior art disclosure. Consequently, the information disclosure statement has been placed in the application file, but the information referred to in this Chinese Office Action has not been considered.

Oath/Declaration

4. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the citizenship of each inventor.

Drawings

5. The drawings are objected to because unclear copies have been provided for Figures 5A-5B and 6A-6B. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The disclosure is objected to because of the following informalities:

On page 2, lines 3-4 of the specification, the following sentence contains grammatical errors: "However, the installation of the rotatable louvers require additional high expenses, and the expenses for its maintenance is increased." This sentence should be corrected to read: "However, the installation of the rotatable louvers requires additional high expenses, and the expenses for its maintenance are increased."

On page 2, line 22 of the specification, the word "fourth" should be changed to the word "forth".

On page 6, line 22 of the specification, a space should be added between the semi-colon and the phrase "the two vortices...".

On page 6, line 24 of the specification, a space should be added between the semi-colon and the phrase "the discharged flow...".

On page 10, line 7 of the specification, the word "respectively" is misspelled "resectively".

On page 11, line 21 of the specification, "FIG. 5" is improperly referred to when the "pair of sinks" is being described. The examiner believes that "FIG. 7" should be referred to in this line rather than "FIG. 5".

On page 11, lines 24 of the specification, the phrase "hit again the wall..." should be corrected to read "hits against the wall...".

Appropriate correction is required.

Claim Objections

7. Claim 19 is objected to because of the following informalities: a space should be added between the words "comprising" and "a". Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. **Claims 1-4** are rejected under 35 U.S.C. 102(b) as being anticipated by Ruscheweyh (US 4,498,786). The specification and the drawings in the Ruscheweyh '786 reference disclose all of the elements recited in **claims 1-4** of this application.

10. Specifically, in regard to claim 1, which is directed to a flow spreading mechanism, Ruscheweyh '786 discloses at least one inlet (inlet to feed conduit 2) through which a fluid flow (individual stream Q_2) is introduced; a flow separating means (delta-shaped insert element 3) for separating the fluid flow introduced through the at least one inlet into at least two fluid flows (separate streams between the edges of the delta-shaped insert element 3 and the conduit walls); and an outlet (outlet at the top end of main conduit 1) for discharging at least two of the at least two fluid flows, which are divided by the flow separating means and joined together thereafter (in main conduit 1 downstream of the delta-shaped insert element 3), wherein complex vortices are formed adjacent to the outlet (Fig. 1) and thus, the fluid flow being discharged through the outlet swings (Fig. 1) while proceeding. See Ruscheweyh '786, Figure 1; column 1, lines 24-38; column 4, lines 65-68; and column 5, lines 1-8. Therefore, because all of the elements in claim 1

of this application are disclosed by the Ruscheweyh '786 reference, this claim is rejected in accordance with 35 U.S.C. 102(b).

11. In regard to claim 2, which depends upon claim 1, Ruscheweyh '786 further discloses that the flow separating means comprises a plurality of conduits (main conduit 1 and feed conduit 2) for providing the flow introduced from the inlet with flow paths. Refer to Ruscheweyh '786, Figure 1; column 4, lines 65-68; and column 5, lines 1-8. Thus, Ruscheweyh '786 meets the language of this claim.

12. In regard to claim 3, which depends upon claim 2, Ruscheweyh '786 further discloses that the number of the inlets is the same as that of the conduits (both main conduit 1 and feed conduit 2 have separate inlets), and each inlet corresponds to each conduit (the inlet through which stream Q_1 is introduced corresponds to main conduit 1, whereas the inlet through which stream Q_2 is introduced corresponds to feed conduit 2). See Ruscheweyh '786, Figure 1; column 4, lines 65-68; and column 5, lines 1-8. Consequently, the Ruscheweyh '786 reference also meets the language set forth in claim 3.

13. In regard to claim 4, which depends upon claim 2, Ruscheweyh '786 further discloses that the flow separating means comprises two conduits (main conduit 1 and feed conduit 2). Refer to Ruscheweyh '786, Figure 1; column 4, lines 65-68; and column 5, lines 1-8. Therefore, Ruscheweyh '786 also meets the language set forth in this claim.

14. **Claims 1, 5-7, 9, and 19** are rejected under 35 U.S.C. 102(b) as being anticipated by Ruscheweyh (JP 07-151108 A). The specification and the drawings in the Ruscheweyh '108 reference disclose all of the elements recited in **claims 1, 5-7, 9, and 19** of this application.

15. Specifically, in regard to claim 1, which is directed to a flow spreading mechanism, Ruscheweyh '108 discloses at least one inlet (inflow passage 1) through which a fluid flow is introduced; a flow separating means (spreading flow part 2) for separating the fluid flow introduced through the at least one inlet into at least two fluid flows (two streams between the edges of the ellipse or circular inclusion side 4 and the flow passage walls); and an outlet (outflow passage 3) for discharging at least two of the at least two fluid flows, which are divided by the flow separating means and joined together thereafter (in outflow passage 3 downstream of the spreading flow part 2), wherein complex vortices are formed adjacent to the outlet (Fig. 1) and thus, the fluid flow being discharged through the outlet swings (Fig. 1) while proceeding. See Ruscheweyh '108, Figure 1; column 2, lines 41-50; column 3, lines 1-13; see also attached English translation of Ruscheweyh '108, paragraphs [0012-0014]. Therefore, because all of the elements in claim 1 of this application are disclosed by the Ruscheweyh '108 reference, this claim is rejected in accordance with 35 U.S.C. 102(b).

16. In regard to claim 5, which depends upon claim 1, Ruscheweyh '108 further discloses that the flow separating means (spreading flow part 2) comprises a conduit to form a flow path between the inlet (inflow passage 1) and the outlet (outflow passage 3), and a blunt body (ellipse or circular inclusion side 4) placed inside the conduit to form two separated flow paths (two streams between the edges of the ellipse or circular inclusion side 4 and the flow passage walls 2) inside the conduit. Refer to Ruscheweyh '108, Figure 1; column 2, lines 41-50; column 3, lines 1-13; see also attached English translation of Ruscheweyh '108, paragraphs [0012-0014]. Thus, Ruscheweyh '108 meets the language of this claim.

17. In regard to claim 6, which depends upon claim 5, Ruscheweyh '108 further discloses that the two separated flow paths (two streams between the edges of the ellipse or circular inclusion side 4 and the flow passage walls 2) are formed extending in a part (2) of the conduit. See Ruscheweyh '108, Figure 1; column 2, lines 41-50; column 3, lines 1-13; see also attached English translation of Ruscheweyh '108, paragraphs [0012-0014]. Consequently, the Ruscheweyh '108 reference also meets the language set forth in claim 6.

18. In regard to claim 7, which depends upon claim 6, Ruscheweyh '108 further discloses that the two separated flow paths (two streams between the edges of the ellipse or circular inclusion side 4 and the flow passage walls 2) are formed adjacent to the outlet (outflow passage 3) in the conduit. Refer to Ruscheweyh '108, Figure 1; column 2, lines 41-50; column 3, lines 1-13; see also attached English translation of Ruscheweyh '108, paragraphs [0012-0014]. Therefore, Ruscheweyh '108 also meets the language set forth in this claim.

19. In regard to claim 9, which depends upon claim 7, Ruscheweyh '108 further discloses that the blunt body is columnar (ellipse or circular inclusion side 4) with its longitudinal axis substantially perpendicular to the direction of the flow inside the conduit (major axis of ellipse 4 is perpendicular to the flow arrows in inflow passage 1). See Ruscheweyh '108, Figure 1; column 2, lines 41-50; column 3, lines 1-13; see also attached English translation of Ruscheweyh '108, paragraphs [0012-0014]. Thus, Ruscheweyh '108 meets the language of claim 9.

20. In regard to claim 19, which depends upon claim 1, Ruscheweyh '108 further discloses that a heat exchanger comprises a flow spreading mechanism as recited in claim 1. Refer to Ruscheweyh '108, column 1, lines 29-43; see also attached English translation of Ruscheweyh

'108, paragraphs [0001-0002]. Consequently, the Ruscheweyh '108 reference also meets the language set forth in claim 19.

Claim Rejections - 35 USC § 103

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

22. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ruscheweyh (JP 07-151108 A) in view of Nawa et al. (US 4,327,869). These two references, when considered together, teach all of the elements recited in **claim 8** of this application.

23. In particular, claim 8 of this application is obvious when Ruscheweyh '108 is viewed in light of Nawa et al. As described above, Ruscheweyh '108 discloses all the limitations of claim 7, the claim upon which this claim depends. However, claim 8 further discloses that the blunt body is a plate which is substantially perpendicular to the direction of the flow inside the conduit. Ruscheweyh '108 does not contain these additional limitations. Nawa et al., although, teaches a blunt body in the form of a plate (flat control vane 11) which is substantially perpendicular to the direction of the flow (a_4) inside the conduit (fluid passage or duct 10 formed by walls 2, 3, 5, and 6). Refer to Nawa et al., Figure 2(d); column 2, lines 47-68; and column 3, lines 1-2. Nawa et al. is analogous prior art under 35 U.S.C. 103 because the fluid spreading mechanism disclosed in this application and the fluid deflecting assembly in Nawa et al. are from the same field of endeavor, namely devices capable of controlling the diffusion of air. See Nawa

et al., column 1, lines 5-7. Moreover, there is sufficient motivation to combine Nawa et al. with Ruscheweyh '108 because Nawa et al. teaches a plate which is substantially perpendicular to the direction of the flow inside the conduit thereby enabling the fluid deflecting device to deliver a more divergent flow of air by creating two separate flows. Refer to Nawa et al., column 2, lines 65-68 and column 3, lines 1-2. Therefore, when Ruscheweyh '108 is viewed in light of Nawa et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to add a plate oriented substantially perpendicular to the fluid flow, as suggested by Nawa et al., to the flow spreading mechanism disclosed by Ruscheweyh '108 in order to create a more divergent fluid flow pattern at the outlet of the device. See Nawa et al., column 2, lines 65-68 and column 3, lines 1-2.

24. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ruscheweyh (JP 07-151108 A) in view of the embodiment depicted in Figure 15 of Ruscheweyh (US 4,498,786). These two references, when considered together, teach all of the elements recited in **claim 10** of this application.

25. In particular, claim 10 of this application is obvious when Ruscheweyh '108 is viewed in light of the embodiment depicted in Figure 15 of Ruscheweyh '786. As described above, Ruscheweyh '108 discloses all the limitations of claim 7, the claim upon which this claim depends. However, claim 10 further discloses that the ends of the conduit on the side of the outlet are symmetrically bent toward the centerline. Ruscheweyh '108 does not contain this additional limitation. Although, the embodiment depicted in Figure 15 of Ruscheweyh '786 teaches that the ends of the conduit (main conduit 1) on the side of the outlet (outlet conduit 1a) are symmetrically bent toward the center of the conduit so that the width of the outlet (outlet

conduit 1a) is smaller than the width of the conduit (main conduit 1). Refer to Ruscheweyh '786, Figure 15 and column 7, lines 58-60. Ruscheweyh '786 is analogous prior art under 35 U.S.C. 103 because the fluid spreading mechanism disclosed in this application and the fluid mixing apparatus in Ruscheweyh '786 are from the same field of endeavor, namely devices capable of mixing and spreading fluid streams. See Ruscheweyh '786, column 1, lines 24-38. Moreover, there is sufficient motivation to combine the embodiment depicted in Figure 15 of Ruscheweyh '786 with Ruscheweyh '108 because the embodiment depicted in Figure 15 of Ruscheweyh '786 teaches a main conduit with convergent walls for the purpose of forming a constricted outlet with a higher resultant discharge velocity. Refer to Ruscheweyh '786, column 4, lines 48-49 and column 7, lines 58-60. Therefore, when Ruscheweyh '108 is viewed in light of the embodiment depicted in Figure 15 of Ruscheweyh '786, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the flow spreading mechanism disclosed by Ruscheweyh '108 with symmetrical, convergent walls immediately upstream of the outlet, as taught by the embodiment depicted in Figure 15 of Ruscheweyh '786, in order to form a constricted outlet with a fluid velocity higher than the velocity upstream of the flow separating means. See Ruscheweyh '786, column 4, lines 48-49 and column 7, lines 58-60.

26. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ruscheweyh (JP 07-151108 A) in view of the embodiment depicted in Figure 15 of Ruscheweyh (US 4,498,786) as applied to claim 10, and further in view of Nawa et al. (US 4,327,869). These three references, when considered together, teach all of the elements recited in **claim 11** of this application.

27. In particular, claim 11 of this application is obvious when Ruscheweyh '108 is viewed in light of the embodiment depicted in Figure 15 of Ruscheweyh '786, and further viewed in light of Nawa et al. Ruscheweyh '108, as modified by the embodiment in Figure 15 of Ruscheweyh '786, lacks a blunt body in the form of a plate having a uniform width and an orientation that is substantially perpendicular to the direction of the flow. Although, Nawa et al. teaches a blunt body in the form of a plate (flat control vane 11) which is substantially perpendicular to the direction of the flow (a_4) inside the conduit (fluid passage or duct 10 formed by walls 2, 3, 5, and 6), and the width of which is uniform (Fig. 1). Refer to Nawa et al., Figures 1 and 2(d); column 2, lines 47-68; and column 3, lines 1-2. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the flow spreading mechanism having convergent conduit walls immediately upstream of the outlet, as modified by Ruscheweyh '786, with a plate having a uniform width and an orientation that is substantially perpendicular to the fluid flow, as taught by Nawa et al., in order to create a more divergent outlet flow pattern in the plane parallel to the flow direction and a more uniform outlet flow pattern in the plane perpendicular to the flow direction. See Nawa et al., Figure 2(d).

28. **Claim 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ruscheweyh (JP 07-151108 A) in view of the embodiment depicted in Figure 15 of Ruscheweyh (US 4,498,786) and Nawa et al. (US 4,327,869), as applied to claim 11 above, and further in view of the embodiment depicted in Figure 7 of Ruscheweyh '786. These three references and the alternative embodiment in the second reference, when considered together, teach all of the elements recited in **claim 12** of this application.

29. Claim 12, which depends on claim 11, is obvious when Ruscheweyh '108 is viewed in light of the embodiment depicted in Figure 15 of Ruscheweyh '786 and Nawa et al., and further viewed in light of the embodiment depicted in Figure 7 of Ruscheweyh '786. Ruscheweyh '108, as modified by the embodiment depicted in Figure 15 of Ruscheweyh '786 and Nawa et al., lacks an interval between the plate and the outlet which is set smaller than the width of the outlet. Although, the embodiment depicted in Figure 7 of Ruscheweyh '786 teaches that an interval between the plate and the outlet (space between the top edge of delta-shaped insert element 3 and the point at which feed conduit 2b meets main conduit 1) that is set smaller than the width of the outlet (width of main conduit 1) such that the flow path from the both sides of the plate to the outlet functions as nozzles (a diverging nozzle is formed between the delta-shaped insert element 3 and the upper wall of the feed conduit 2b, while, on the opposite side of the element 3, a converging nozzle is formed between the element and the lower wall of the feed conduit 2b). See Ruscheweyh '786, Figure 7. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the flow spreading mechanism, as modified by the embodiment depicted in Figure 15 of Ruscheweyh '786 and Nawa et al., with an interval between the plate and the outlet which is set smaller than the width of the outlet, as taught by the embodiment depicted in Figure 7 of Ruscheweyh '786, in order to form nozzles near the outlet thereby increasing the discharge velocity of fluid stream and facilitating spreading and mixing. Refer to Ruscheweyh '786, Figure 7; column 6, lines 30-35.

30. **Claims 13-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ruscheweyh (JP 07-151108 A) in view of the embodiment depicted in Figure 15 of Ruscheweyh (US 4,498,786) and further in view of Nawa et al. (US 4,327,869). These three references, when

considered together, teach all of the elements recited in **claims 13-15** of this application, except for specific dimensional relationships among the plate, inlet, outlet, conduit, and the interval between the plate and the outlet. These dimensional relationships among the aforementioned elements of the flow spreading mechanism merely constitute the optimization of design parameters.

31. In particular, claim 13, which depends on claim 11, is unpatentable over Ruscheweyh '108 in view of the embodiment depicted in Figure 15 of Ruscheweyh '786, and further in view of Nawa et al. Ruscheweyh '108, as modified by the embodiment depicted in Figure 15 of Ruscheweyh '786 and Nawa et al., teaches all of the elements of claim 13, except for the plate, outlet, and inlet all having the same width. It has been held that "[w]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation". See MPEP § 2144.05(II)(A) (quoting *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). However, it has further been held that "[a] particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. Refer to MPEP § 2144.05(II)(B) (quoting *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). In regard to claim 13 of this application, the prior art discloses that width of the plate, outlet, and inlet are variable dimensional parameters. Refer to Ruscheweyh '786, Figures 1, 7, and 15; column 1, lines 24-30. Moreover, the widths of the plate, outlet, and inlet are all result-effective variables because the prior art teaches that certain specific flow patterns and eddy currents are able to be formed downstream of the flow separating means (delta-shaped insert element 3) as a result of varying

these three widths. See Ruscheweyh '786, Figures 1, 7, and 15. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the plate, outlet, and inlet all the same width because the selection of these particular widths merely constitutes the optimization of design parameters which fails to patentably distinguish claim 13 in this application over the flow spreading mechanism of Ruscheweyh '108, as modified by Ruscheweyh '786 and Nawa et al.

32. Claim 14, which depends on claim 13, is unpatentable over Ruscheweyh '108 in view of the embodiment depicted in Figure 15 of Ruscheweyh '786, and further in view of Nawa et al. Ruscheweyh '108, as modified by the embodiment depicted in Figure 15 of Ruscheweyh '786 and Nawa et al., teaches all of the elements of claim 14, except for the portion of the conduit, which has a different width than that of the inlet, having a length that is 1 to 1.5 times the width of the inlet and a width that is 2 to 2.5 times the width of the inlet. The prior art discloses that the length and the width of the aforesaid portion of the conduit are variable, result-effective dimensional parameters because certain specific flow patterns and eddy currents are able to be formed downstream of the flow separating means (delta-shaped insert element 3) as a result of varying this particular length and width. Refer to Ruscheweyh '786, Figures 1, 7, and 15; column 1, lines 24-30. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the portion of the conduit, which has a different width than that of the inlet, with a length that is 1 to 1.5 times the width of the inlet and a width that is 2 to 2.5 times the width of the inlet because the selection of this particular length and width merely constitutes the optimization of design parameters which fails to patentably

distinguish claim 14 in this application over the flow spreading mechanism of Ruscheweyh '108, as modified by Ruscheweyh '786 and Nawa et al. .

33. Claim 15, which depends on claim 14, is unpatentable over Ruscheweyh '108 in view of the embodiment depicted in Figure 15 of Ruscheweyh '786, and further in view of Nawa et al. Ruscheweyh '108, as modified by the embodiment depicted in Figure 15 of Ruscheweyh '786 and Nawa et al., teaches all of the elements of claim 15, except for the interval between the plate and the outlet being about 0.5 times the width of the outlet. The prior art discloses that the interval between the plate and the outlet is a variable, result-effective dimensional parameter because certain specific flow patterns and eddy currents are able to be formed downstream of the flow separating means (delta-shaped insert element 3) as a result of varying this interval. Refer to Ruscheweyh '786, Figures 1 and 7; column 1, lines 24-30. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the interval between the plate and the outlet about 0.5 times the width of the outlet because the selection of this particular interval merely constitutes the optimization of a design parameter which fails to patentably distinguish claim 15 in this application over the flow spreading mechanism of Ruscheweyh '108, as modified by Ruscheweyh '786 and Nawa et al.

34. **Claims 16-17 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ruscheweyh (JP 07-151108 A) in view of Rydahl (US 4,304,098). These two references, when considered together, teach all of the elements recited in **claims 16-17 and 20** of this application.

35. In particular, claim 16 of this application is obvious when Ruscheweyh '108 is viewed in light of Rydahl. As described above, Ruscheweyh '108 discloses all the limitations of claim 1, the claim upon which this claim depends. However, claim 16 further discloses that the flow

spreading mechanism comprises at least one sink with an opening for discharging the fluid inside the space to the outside. Ruscheweyh '108 does not contain this additional element. Rydahl, although, teaches a flow spreading mechanism (specially constructed guide 51 is the flow separating means) wherein the outlet (upper opening of channel 34) is installed in a space (space bounded by walls 35-37 and bottom surface 38), and wherein the flow spreading mechanism further comprises at least one sink (guide 28) installed at a predetermined location inside the space, the sink (guide 28) comprising an opening for discharging the fluid (49) inside the space to the outside (channel section 46,47). Refer to Rydahl, Figure 2; column 3, lines 53-59; and column 4, lines 6-17. Rydahl is analogous prior art under 35 U.S.C. 103 because the fluid spreading mechanism disclosed in this application and the freezer chest flow apparatus in Rydahl are from the same field of endeavor, namely devices capable of improving air flow circulation in refrigerators and freezers. See Rydahl, column 1, lines 46-50. Moreover, there is sufficient motivation to combine Rydahl with Ruscheweyh '108 because Rydahl teaches a flow spreading mechanism with a sink for providing another means by which the direction of the air flow inside a space may be controlled and its diffusion may be improved. Refer to Rydahl, column 4, lines 6-17. Therefore, when Ruscheweyh '108 is viewed in light of Rydahl, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add a sink installed at a predetermined location inside the space, as suggested by Rydahl, to the flow spreading mechanism disclosed by Ruscheweyh '108 in order to further enhance the diffusion of the air flow inside that space. See Rydahl, column 4, lines 6-17.

36. In regard to claim 17, which depends on claim 16, Rydahl further teaches that the number of the at least one sink (guide 28) is even-numbered (two), and each pair of the sinks (guides 28)

are installed to face each other in a line traverse to the movement direction of the flow (as shown by arrows 48) discharged through the outlet (upper opening of channel 34). Refer to Rydahl, Figure 2; column 4, lines 6-17. Therefore, when Ruscheweyh '108 is viewed in light of Rydahl, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add a pair of sinks, which face each other and are both traverse to the direction of the discharge air flow at the outlet, as suggested by Rydahl, to the flow spreading mechanism disclosed by Ruscheweyh '108 in order to further enhance the space air diffusion on both sides of the aforesaid outlet. See Rydahl, column 4, lines 6-17.

37. In regard to claim 20, which depends on claim 1, Rydahl further teaches that a refrigerator (freezer) comprises a flow spreading mechanism as recited in claim 1. Refer to Rydahl, column 2, lines 14-17 and column 4, lines 6-17. Consequently, Ruscheweyh '108 in view of Rydahl also teaches the language of claim 20.

38. **Claim 21** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ruscheweyh (JP 07-151108 A) in view of Sugawara et al. (US 4,556,172). These two references, when considered together, teach all of the elements recited in **claim 21** of this application.

39. In particular, claim 21 of this application is obvious when Ruscheweyh '108 is viewed in light of Sugawara et al. As described above, Ruscheweyh '108 discloses all the limitations of claim 1, the claim upon which this claim depends. However, claim 21 further discloses that an air conditioner comprises a flow spreading mechanism as recited in claim 1. Ruscheweyh '108 does not contain this additional element. Sugawara et al., although, teaches an air conditioner with a flow direction controller disposed at its blow-out portion, which controller also includes flow separating means. See Sugawara et al., Figures 5 and 8 and column 1, lines 5-8. Sugawara

et al. is analogous prior art under 35 U.S.C. 103 because the fluid spreading mechanism disclosed in this application and the flow direction controller in Sugawara et al. are from the same field of endeavor, namely flow directing means for air conditioners. Refer to Sugawara et al., column 1, lines 5-8. Moreover, there is sufficient motivation to combine Sugawara et al. with Ruscheweyh '108 because Sugawara et al. teaches that a flow spreading mechanism, such as the one disclosed by Ruscheweyh '108, is preferably incorporated in an air conditioner in order to obtain a uniform space temperature distribution. See Sugawara et al., column 1, lines 9-15. Therefore, when Ruscheweyh '108 is viewed in light of Sugawara et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the flow spreading mechanism disclosed by Ruscheweyh '108 in an air conditioner, as suggested by Sugawara et al., for the purpose of attaining a uniform temperature distribution in the room being air conditioned. Refer to Sugawara et al., column 1, lines 9-15.

Allowable Subject Matter

40. **Claim 18** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

41. See attached form PTO-892 for additional pertinent prior art, which was not directly relied upon in this action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick F. O'Reilly III whose telephone number is (571) 272-3424. The examiner can normally be reached on Monday through Friday, 8:30 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Josiah C. Cocks can be reached on (571) 272-4874. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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JOSIAH C. COCKS
PRIMARY EXAMINER